



# Supporting Bank Stabilization and Riverine Habitat Using Dredged Sediment

## Dredging Operations Environmental Research (DOER) Program

U.S. ARMY CORPS OF ENGINEERS

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### Focus Area

Sediment Dredging Processes

### Problem

Many rivers with navigation channels experience degraded habitat due to vessel wake and other anthropogenic influence in shallow water. Near-bank wetland and shallow water habitat have been reduced because of erosion caused by channel realignment, vessel wake, or near-bank construction. Nearshore habitat supports ecosystem diversity and bank stability. Many USACE districts have developed structures which support habitat diversity by creating secondary channels and quiescent backwaters. An alternative to hard structures is sustainable use of dredged sediment to create dynamic nearshore features which reduce vessel wake energy near banks. These features are degraded by ongoing vessel wake, but are renourished during subsequent dredging cycles. This beneficial use strategy is consistent with the USACE Engineering with Nature initiative and provides solutions which support navigation, flood risk management, and ecosystem restoration business lines.



Small hydraulic dredge operating in Rock Island District

### Study Description

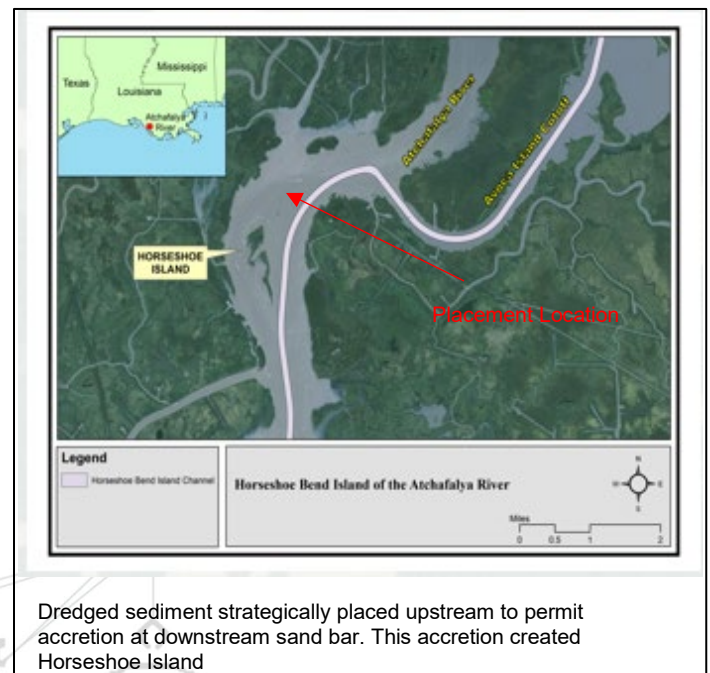
Beneficial use of dredged sediment to support bank stability and support ecosystem health is practiced by USACE. However, no formal engineering or ecological guidance is available and important information from individual projects is not disseminated USACE-wide. This study will query Districts to develop a comprehensive evaluation of the practice. Data from multiple sites will be gathered and evaluated collectively. Data gaps will be identified and addressed through additional monitoring in collaboration with District partners. Finally case studies will be documented and engineering and ecological guidance will be developed.

### Products

- Engineering and ecological guidance for riverine BU to stabilize banks and support ecosystems
- Documentation of case studies
- Training/Workshop

### Summary

This research will develop a coupled physical processes/ water quality/ wetland ecosystem evolution model with fidelity required to evaluate design alternatives for sustainable, resilient ecosystems, including sustainable dredged material management strategies to support wetlands. Guidance for developing similar modeling systems for other habitats will also be developed.



*Balancing operational and environmental initiatives and meeting complex challenges of dredging and dredged material placement in support of the navigation mission.*